

AVIATION

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A close up "shot" of an Arrow Sport biplane coming in to land.

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Special Features

Gliding as a Sport
Radio on the Byrd and Wilkins Planes
Flight Instruction at the Klemm School

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Radio on the Byrd and Wilkins Planes

By D. R. LANE

WHED WHED!

Early on the morning of January 25 lived to Roebuck, operator at the Maseel Rock radio station, San Francisco, Calif., knew that call meant one of the apparatus he could have identified it as Byrd's manner, the City of New York even had the winter not given his signature. Anything down the Byrd expedition, the station is of special interest to the Maseel Rock station, which often "works" with the expedition and so Roebuck himself is.

He heard the speaker about the steamship radio, WHED, which is the New York Times radio station, so stand by for a list of the aircraft radio set in the Paceroid plane "Stearns and Stripes," one of the craft Byrd is to use in exploration work over the great southern sea way. Then, clear and distant he heard a different apparatus sending "WHED! WHED!"

When the call had been repeated for some minutes, Roebuck "broke" and called "WPC" which is the call for Byrd's supplies. He called for a minute, signed off and waited. Then came this answer:

"O.K. Your signals are strong, here, to my location, steady signal!"
It was a world's an-

and. Two-way radio communication had been established over 8000 mi. of water, sea and land, from the "Stars and Stripes," flying 3000 ft. above the Bay of Whales to San Francisco. Last, Malcolm F. Hanson of the Bureau of Standards, Byrd's chief radio engineer, was at the key in the plane. He and Roebuck exchanged several messages.

The significant thing about the matter, according to Roebuck and Heintz, the latter of whom designed all the radio apparatus for airplane use of both the Byrd and Wilkins expeditions, is that the communication was established in the same manner as a steamship anywhere in the ocean would call a land station; there was nothing prearranged about it, no set schedule, no special code used by the land station to get the messages.

Roebuck said the signals came in strong as strong as those normally received from the City of New York, satisfactorily strong, he said, so that they could be coded to record direct to a typewriter.

He listened to the plane sending throughout most of yesterday, about an hour in all, and about 20 times, after establishing a new record heard a full as WHED answered the plane's call, and plane and the plane's answer carried on a continuous over a distance many miles greater than that from San Francisco to the Bay of Whales.

This was the fourth suitable performance for these radio sets. A few days earlier, the City of New York was communicating with the Maseel Rock station. Hanson was at the key, the "dial" and "view a set" of the commercial code, having all the world as his practiced fingers manipulated the instrument. Previously he finished the book of press dispatches which had occupied most of the schedule.

"Plans stand by at the end of the regular schedule to listen for a small aircraft transmitter," he heard off. "Now have you anything for us?"

"O.K. we stand by," promised the operator at Maseel Rock and started the working gear of messages heard for Antarctica. After a while he finished the job of "station," turned and turned the dial and heard off in code.

"Go ahead aircraft transmitter!"
And then in a minute or two firm strong signals, easily readable, came living into his employees. For a quarter of an hour the two stations chatted, comparing notes on the signals and exchange going after the way of wireless and wire operation the world over.

None of Commander Byrd's planes was in the air, the set was being operated under the conditions of a simulated forced landing, as a test under actual difficulties of the manner in which it would perform, what it could do if need be.

Several messages were transmitted in either direction among them one from Hanson to Heintz. "Congratulations on performance of WPC and WPC-2B." The latter was the call signals of the aircraft set and the Maseel Rock station. Hanson also described the manner in which the set was being operated, with a note to carry a "three-quarter wave" antenna aloft.

This incident marks an advance in radio transmission of great importance to the aviation industry since the

Heintz and Kaufman Equipment
Establishes a World's Record
for Both Two Way and
One Way Aircraft
Communication

sending apparatus at the Bay of Whales, heard over an 8000 mi. stretch of sea, water and land, was employed by a small gasoline engine generator set hardly larger than a suitcase and very light.

Less dramatic but hardly less important was another covering a few days previously when the similar airplane radio set (operated) in the expedition of Capt. St. George Hanson Wilkins was heard over approximately the same distance and under virtually the same conditions, sending dispatches from Wilkins' base at Desolation Island to the British admiralty station at the Falklands. The Wilkins' expedition used two Jackman "Vega" antenna planes. Direct interchange of messages, however, was not attempted by Hanson to Morris, operator of KUT, station of the San Francisco Frontier which overheard the aircraft set.

Both sets, as far as the airplane radio equipment used by both the Byrd and Wilkins expeditions, was designed and built by the Heintz & Kaufman Co. and is most essential in similar to the sets built by this firm for the "Southern Cross" and used on that plane's flight to Australia.

The gasoline-driven generator apparatus for use in event of a forced landing, however, is an addition to the constructed equipment and not gasoline-driven generator set for the Wilkins expedition. The Wilkins transmitting apparatus is presently based on a wave-length of 27.50 meters. The Byrd sets, while intended to be used chiefly on a wave-length of 34 meters, are capable of being tuned to other frequencies.

Each transmitter utilizes a single 50 watt tube and is wound on the hand-drawn hand-grid current used in the Southern Cross set, the set carried by Byrd and Heintz on their tragic flight in the "Della Spina" and other



Left: The Heintz and Kaufman type B5 aircraft transmitter used on Commander Byrd's plane. Right: The Heintz and Kaufman high frequency aircraft transmitter used in Capt. George H. Wilkins.



Gliding as a Sport

*Some Interesting Information Regarding Activities Here and Abroad,
Type of Equipment Used, and Future Possibilities*

By ROBERT B. EVANS

GLIDING, the art that was put away so suitably, so to speak, when the Wright brothers dumped an engine on one of their gliders and made an airplane out of it, seems destined to be hauled out of the aeronautical warehouse, dusted off, and reinstalled as an important factor in the development of American aviation. Much as Wilbur and Orville Wright built their gliders back as the first years of this century to solve the problems of heavier-than-air flight, gliders are now being built to solve a new problem in the field of aviation. That problem, briefly, is the development of air-confidence and piloting ability.

In eagles' flight as it is now coming into fashion the character of a fatal accident is precisely nil. One fails, instead, true, not his death in a glider, but his was a crash without serious, elevators, or rudder. The thought he could keep it balanced by shifting his weight, and a sudden gust of wind proved him wrong. Modern gliders, however, with a wealth of aerial performance data to draw upon, are designed to secure a maximum of stability, and unchangeability in flight. Fatal accidents are so rare that only under freak conditions or through deliberate violations of the rules of safety.

As for cost, a glider is within the means of almost any young man's purse. A standard schooling glider designed to make a lot of hard knocks without cracking or springing, is now being marketed by a Detroit firm at about \$300, a price that will probably be reduced in

the event of the plant is speeded up. It is a monoplane of the conventional high-wing type with a spread of about 34 ft. and a chord of five feet. The pilot sits directly in front of the wing on the open, ladder-work fuselage and guides the craft with regular airplane controls.

A schooling glider can be built from plans obtainable from the National Glider Association, Detroit, Mich., but home-made gliders are not recommended for those without considerable knowledge of airplane design and construction. The idea a glider can be built together with no particular pains, and that discarded airplane wings can be utilized for the purpose, is false and dangerous. Great care must be exercised in designing and constructing the wings, which are by far the most important part of a glider, and such work should not be attempted without a thorough knowledge of aerodynamics. For those unskilled in building their own planes, however, materials are available at a cost of about \$600 for a schooling glider.

Flying instruction—one of the hallmarks of improved aviation—pilot of engine planes—need not bother. In German gliding schools beginners are familiarized in a ground way with the structural details of the schooling glider and the methods, and it is once learned to make short hops over level ground. As they grow the feel of the glider in flight, they work up gradually to longer and longer hops, eventually starting from the tops of hills and making flights of a minute or more duration. The method of learning is fairly rapid, but still characteristic of German thoroughness.

A technique is now being developed at America that produces the same results but does not require attendance at a school as does the German.

With a 20 or 15 mph wind blowing, the beginner takes the pilot's seat and is slowly pulled into the wind. He is expected to make the proper lateral movements of the stick to keep the wings from twisting the ground. This means to some of balance gives him the feel of the stick and helps to make the correct use of the stick.

Having demonstrated his ability to maintain the balance of the craft, he is ready for short hops off level

ground, from which he progresses naturally to longer and longer ones. Experience has shown that he can be depended on to pull the stick back to level off when he noses down too sharply. As soon as one member of a group has learned to fly, others can learn much from watching him closely.

Crack-ups are, of course, inevitable; it is estimated that one out of five beginners ends up a ship in learning. Schooling gliders are as designed, however, that repairs can be made rapidly and effectively. They are loaded in upstake the main members, replacing ribs, and patching the fabric, all of which can be done from directions by one man with an ordinary knowledge of woodworking. These repairs, although noticeably expensive, are likely to be the largest item of upkeep. The only other item is the rental of a school—no engine barn will do—in which to keep the craft, and the rental, in the case of a professional farmer, of a suitable terrace.

Next to the glider itself, the terrace is the most important factor in gliding. It is even more important to gliding than suitable landing fields are to engine aviation, for gliders, and especially sailplanes, use the geography of the terrain to remain aloft. It should, therefore, be chosen with great care and in accord with certain fundamental requirements.

In the first place the ground must be clear of obstructions such as trees, telegraph or telephone poles, fences, or shrubbery that might snag a glider about halfway at the mercy of air currents. Secondly, the terrain must include at least one bare level from 50 to 200 ft. in length, with an unobstructed slope in the direction of the prevailing wind. Preferably the knoll should have an unobstructed slope in every direction to take advantage of all winds. The level terrace consists of several parallel ridges across the prevailing wind, or a series of knolls in the line of the prevailing wind, so that a glider descended from one can gain altitude and swoop to the next, where upward currents can take it gain altitude for a second swoop, and so on until the hills give out. It should be mentioned here that sharply cone-shaped hills are undesirable for a broad, relatively gentle slope is necessary to define the wind upward into a usable rising current. Thirdly the ground surrounding the hills must be free of rocks, clumps, or other irregularities that would jar or break a glider in landing. A spruce turf or plowed land to cushion landing falls is almost ideal. Lastly the terrace should be accessible to automobiles and trucks, for the planes weighing from 200 to 400 lb.

Wartenberg on his way aloft in a glider

designed to take full advantage of upward wind currents. In this progress to soaring experience, it has been found that about a third of every group, lacking the inherent sense of balance and judgment, will be washed out. To the remaining two thirds, however, a vast field of sport and advancement presents itself.

It is by seeing the German pilots have established an altitude record of 2,500 ft., an endurance record of 15½ hr., and a distance record of 42 mi. from the point of take-off. These marks reveal the tremendous possibilities of soaring and offer an admirable target for American youth and skill to shoot at. There is no reason why this country should not produce planes and pilots capable of meeting and even surpassing those of Germany.

The essential element in soaring is the utilization of vertical air currents which are capable of carrying a lifting force on a flat surface such as the wings of a wing. The unaided motor pilot must therefore know the terminology of these currents inside and out if he is to use them to the best advantage. Generally speaking, air currents sweeping along the ground are deflected upward on striking the base of a hill, follow the slope

have to be shipped in and out, and pilots and acrobats should be able to come and go easily.

Once possessed of a schooling glider and a suitable terrain, a gliding group can readily acquire the fundamental skills, sense the all-important feel of the glider in flight, and progress naturally from gliding down to hills to single soaring—and, with practice, to true soaring with gliders carefully



Aerial picture of the German, Wartenberg, in soaring flight.



A University of Michigan primary training glider in flight

to its crest, and proceed down the leeward side. These air currents passing up the hill form what is known as the wind zone, which extends upward along the slope the height of the hill. A pilot, launched from the crest of a hill, allows himself to be buoyed by these rising currents high above the crest of the rise, gliding upward with which to glide into the wind zone of the next hill, taking care not to glide into the valley below the rise. By skillful patting of the craft, he can, if he wishes, maintain his altitude over any spot, using the virtual currents of the same wind zone as long as the wind continues to blow. Some long experienced and exceptionally able pilots can rise to a position above a moving cloud and take their advantage of rising currents caused by the wind curving over the windward edge. By following the clouds they are able to travel long distances.

Spectacular soaring feats require a specially designed craft known as a *soarer*, but following gliders, such as one he purchased from Gliders, Inc., Detroit, Mich., or built from the National Glider Association's plans, are capable of single soaring. In such a craft, Herr Krieger of Berlin sustained aloft 155 hr. and attained an altitude of 5,110 ft. These gliders are designed to be launched with a long rubber cable or shock-cord which will give them a lift wind and altitude of from 20 to 50 ft. descending upon the force used to stretch the cord. With this initial advantage it is possible to soar even the relatively heavy schooling glider.

The launching of a glider with the shock-cord is one of the most fascinating instances of gliding. A ring in the center of the cord is slipped into a hook on the nose of the glider while from four to six members of the ground crew on either end of the cord pull up its slack forming a huge "V" in front of the craft. Other members of the ground crew brace themselves against the ground and hold the glider in line. The pilot shouts "Wick!" to those handling the shock-cord, and a little later "Rise!" Almost immediately he shouts "Let Go!" whereupon the cord is released, and the glider is catapulted forward with a force of about 40 lb. It leaves the ground almost instantly, and as it catches up with the cord the crew, once out of the hook, leaving the glider free and in full flight.

In time, of course, a gliding group will have enhanced the soaring possibilities of a schooling plane, and will start carrying around for a soarer or record plane. As yet they are being built only privately in this country, but a Ger-

man manufacturing concern, Legt Muller at Dornstadt, makers of the famous "Dornier" record plane, and Herr Ackermann who has a private shop at Cassel, where he makes the equally famous "Cassel" soarers, are both prepared to make soarers. A record plane costs anywhere from \$700 to \$1,500. The "Cassel" is a huge machine with a wingspan of 65 ft.—about that of a Ford-Spot tri-engine transport—but weighs only 215 lb. complete. It is constructed entirely of wood, the frame being covered with 1/32 in. plywood put on in three layers and held together with waterproof glue. Its enclosed fuselage gives it an appearance strikingly similar to that of a Lockheed-Vega monoplane.

German gliding schools also use an intermediate soarer known as the "Pfeifling" about which a few words will not be amiss in connection with a discussion of these schools and particularly the outstanding one at Wasserschlopp, near the Rhine delta near Frankfurt. Wasserschlopp possesses perhaps the finest gliding terrain in the world with both gentle and steep slopes rising in all directions. The general profile of the Rhine territory is not very steep but expansive, adapting it admirably to distance flights which begin at the peak 950 meters above sea level and end at the foot of the terrace, 500 meters above sea level, giving a maximum descent of about 450 meters. This is the scene of the annual contests among the hundred odd German glider clubs, and here most of the distance, duration, and altitude records have been established.

Here also is the Wasserschlopp school which enrolls in



Right: If of Michigan students inspecting their new training craft. Below: Force being put into preparing to top off.



Below: A German soaring craft in flight over Wasserschlopp.

Right: Front corner view of a German mode intermediate training glider.

Below: A German primary training glider in the air.

soaring, the average instruction course at Wasserschlopp lasts about 30 days.

Gliding in Germany is rapidly approaching the status of a national sport. It has been adopted by the universities as a form of intercollegiate rivalry, enjoying a popularity and enthusiasm comparable to that of American football. Annually the different universities, colleges and other glider clubs meet at Wasserschlopp to pit their skill against one another in a series of sporting competition. A high standard of independence is maintained by these college men who, with little or no outside aid, work out their own problems and build and fly their own craft.

But the sporting element, while accountable for the popularity of gliding, was discovered only incidentally. Limited as to powered planes by the terms of the Versailles treaty, the German census took to gliders as a means to further study and progress in the aeronautical field. Thus German aviation has learned much from the gliders in study apparent to any one with an opportunity to observe. Not only has the glider proved superior to the wind tunnel as a means of testing reconstructions, but it has made valuable contributions to the training of engine pilots. Indeed many commercial flying organizations now require their pilots to be graduates of gliding schools.

It was with a view to securing these benefits for American aviation that the National Glider Association was founded by Edward S. Evans, president of the Evans Aero Landing Co., who has long been interested in aviation and actively engaged therein through the chairmanship he holds of the Aviation committee of the Detroit Council of Commerce. The association is a purely organization designed to promote gliding throughout the country by disseminating information, blue-prints, and advice to affiliated clubs, and by establishing standards of competence. At least two of the affiliated clubs have already taken to the air in schooling gliders—one of the University of Michigan, Ann Arbor, and the other in San Francisco.

America with half a million more students than Germany, has less in cash raw material, and a heavier tax on cash money is in a position to lend the world in gliding as soon as the sport has permeated our universities and become thoroughly Americanized.

many students as possible the year "round" but mainly between October 15 and December 15, the ideal gliding season. These students are first granted in the grades consists of construction and aerodynamics. Then they are ready for the schooling glider or "Zugflieger" in which they must make a distance glide of at least 30 m. duration to pass the "A" test. Emphasis at this stage of the course is placed upon acquiring the feel of the craft in flight. For the "B" test a pilot is given a "Pfeifling" or Cassel B plane that is distinguished from the schooling plane by having an enclosed fuselage, and from the latter by being of heavier and more rugged construction. To pass his "B" test a pilot must keep this glider aloft for one minute and make a right and left turn. The final "C" test requires a flight of five minutes above the starting point—that is, in the same wind zone—after which the student receives in absence of the school with a glider pilot's diploma. Contrary to the popular notion it is relatively simple to master the art of gliding and

Gates Will Head Two New Firms

One to Produce Training Craft
Other Will Offer Line
of Services

NEW YORK, N. Y.—Bob E. Gates, chief engineer, is president and general manager of both new service companies incorporated in New York in the last few days. The two are the Gates Aircraft Corp., incorporated under the laws of Idaho and the Gates Aircraft Corp., incorporated under the laws of Idaho and the Gates Aircraft Corp., incorporated under the laws of Idaho.

The Gates Aircraft Corp., of 100 West 17th St., New York, N. Y., is a subsidiary of the Gates Aircraft Corp., of 100 West 17th St., New York, N. Y., which is a subsidiary of the Gates Aircraft Corp., of 100 West 17th St., New York, N. Y.

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Name Watkins Firm Wright Parts Dealer

PATERSON, N. J.—Through a recent reorganization, the Watkins Aircraft Co., Paterson, N. J., has been authorized to sell Wright parts and accessories. The company is now authorized to sell Wright parts and accessories.

It is announced that a complete line of parts will be carried at the Watkins Aircraft Co., Paterson, N. J., which is a subsidiary of the Watkins Aircraft Co., Paterson, N. J.

A change in the contract allows completion of the agreement in 30 days by either party. E. A. Watkins is president and the other company with Charles E. Fure, vice-president and R. D. Fure, secretary.

On U. S. S. Saratoga



(From board on deck of our craft carrier Navy (USS Saratoga) carrier

Government Names 36 "First Aviators"

WASHINGTON, D. C.—Thirty-six names are listed in a recent Air Force magazine. The names are listed in a recent Air Force magazine.

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Pittcairn Autogiro Concern Formed

Staff of Philadelphia Firm Starts Developments on Cereus Craft

PHILADELPHIA, PA.—The new and control the right to manufacture the Autogiro in this country. The new and control the right to manufacture the Autogiro in this country.

PHILADELPHIA, PA.—The new and control the right to manufacture the Autogiro in this country. The new and control the right to manufacture the Autogiro in this country.

Texas New Helicopter

The machine was first flown in England and shipped to this country. The machine was first flown in England and shipped to this country.

New 36 Hr. Course Offered

LOS ANGELES, CALIF.—The Aero Association of California is offering a new 36-hour course in flight training. The Aero Association of California is offering a new 36-hour course in flight training.

U. of O. to Offer Course

NORMAN, OKLA.—A ground school course, covering all branches of aeronautical engineering and offering 17 or 18 units of credit, is being offered by the University of Oklahoma. The course is being offered by the University of Oklahoma.

Boeing Inspects Props With Etching Process

SALT LAKE CITY, UTAH—Inspection of metal aircraft propellers is being done with etching process. The etching process is being done with etching process.

"The purpose of the etching process is to ensure a fine film of metal on the blades. The etching process is to ensure a fine film of metal on the blades.

Mnny New Students For Western College

LOS ANGELES, CALIF.—Thirty new students were enrolled at the Western College of Aeronautics this year. The Western College of Aeronautics this year.

This is not a new high mark, as in 1938, 40 students were enrolled. The Western College of Aeronautics this year.

Reduces Now Eastern

NEW YORK, N. Y.—The Eastern Air Transport Corp., formerly Eastern Air Transport Corp., is now Eastern Air Transport Corp.

Boeing Inspects Props With Etching Process

SALT LAKE CITY, UTAH—Inspection of metal aircraft propellers is being done with etching process. The etching process is being done with etching process.

American Eagle Orders Kinners

GLENDALE, CALIF.—Caters have been placed with the Kinners Aircraft and Motor Corp., Glendale, Calif., by the American Eagle Aircraft Co., Kansas City, Kan., for the delivery of 200 engines. The American Eagle Aircraft Co., Kansas City, Kan.

Lefted Nasty Passes Test

LINCOLN, N. D.—An airplane is now in the Lincoln Aircraft Co., Lincoln, N. D., for the delivery of 200 engines. The Lincoln Aircraft Co., Lincoln, N. D.

Aeronautical Patents

WASHINGTON, D. C.—The issuing of the following patents pertaining to aeronautics is announced by the United States Patent Office at Washington.

1,901,212. Harry D. Munger, New York, N. Y., 1,901,212. Harry D. Munger, New York, N. Y., 1,901,212. Harry D. Munger, New York, N. Y.

Aviation Project Firm Announced

Aircraft Development and Construction Co. Formed at Philadelphia

PHILADELPHIA, PA.—Aircraft Development and Construction Co. has been formed here to develop and construct aircraft. The Aircraft Development and Construction Co. has been formed here.

The company is at present entering a contract for the construction of a new building for the company. The company is at present entering a contract for the construction of a new building for the company.

Experts on Board

The present officers of the company are: Harry D. Munger, president; Harry D. Munger, president; Harry D. Munger, president; Harry D. Munger, president.

Neon Beacon

AMONG THE exhibits at the recent New York Aviation Show was a new type of beacon employing a Neon coil as its light source and operated by high voltage electric current, and which is said to be the result of long experimentation. The beacon was exhibited by Claude Neon Lights, Inc., 30 East 42nd St., New York, N. Y.

The principal of projection is similar to that of a searchlight consisting of a concentrated Neon source in contact focus to a spherical Morgan ultra-violet mirror.

The beacon is enclosed in a weather-proof housing which is proved so that it may be adjusted to any elevation desired and rotated by an electric motor enclosed in a weather-proof gear box.

This beacon confers the advantages of a searchlight with the extra efficiency of greater luminous power with Neon. It has all the advantage of the Neon unobscured beacon of the type used at Chrysler 1 motor and Tugboat, Berlin is that the Neon coil is the longest light wave and thereby the most efficient in generation of light and heat. It has the additional advantage of long life and low operating cost. The fact that Neon is a cold light prevents the flicking and cracking of the mirrors and also prevents the vibration of light on the face of the light.

U. S. Grinder

A NEW air craft grinder that is said to give promise of being one of the most popular in the U. S. line, is now being announced by The United States Electrical Tool Co., Cincinnati. We'll leave



U. S. Air Craft Grinder.

builders of portable electric drills and grinders. It includes full bearings of a wide by known motor, heavy shaft and spindle, a powerful 34 hp motor of high fuel speed, a fine and a coarse wheel, 6 in. x 3 in., adjustable tool rest, and complete electrical connection.

This grinder is furnished regularly for 110 volt, 60 cycle.

However, it can also be furnished for 220 volt, two phase plus, also in 110 and 220 volt D. C. at slightly additional cost.

Rusco Safety Belt

THE RUSSELL Manufacturing Co., 249 Broadway, New York City, manufacturers of "Russo" Aero Boxes and other textile ware products, is devoting a considerable amount of time and study to the development of a complete line of safety-belts to cover every possible requirement and mode of harness and operation.

The most recent addition to the line is an all-leather belt, 2½ in. wide which is now being manufactured for several of the larger aircraft builders. This belt using Army and Navy standard drop-forged hardware, is furnished with a quick-release buckle and adjustment are provided at each end. It is intended to meet the standards now set by U. S. Army and Navy regulations.

Rusco safety-belts are now manufactured in either all-leather, all-canvas, or canvas with-leather combination, in four 2½ in. wide styles. Various color combinations are available in each of the six present models, making it possible for the builder to select a belt to match the body trim of any plane.

SIDE SLIPS

By ROBERT R. OSBORN

The Intrepid Aviator dropped into the office on St. Valentine's Day all doped out in a fairly new suit, flaring necktie, pool gray apron and a cane. His reply to my inquiry as to what all of the celebration was about was to the effect that now that Colonel Lindbergh had become engaged he was going to do a little serious stringing out with the girls. Nevertheless, he said, he hadn't been able to make better than second best with any of them.

The comedian he selected as Tim Woke's Aviator's Aviatorial. Even the appearance of a substantial from a well-known aviation is a shining crown advertisement. This particular flyer is noted among his friends and acquaintances for having to share with a blow torch as an every wheel and for having whiskers which are personally about one thirty-second of an inch long.

In listening to the conversations of many of the visitors to the New York Aviation Show we are very much surprised to find how many people are interested in "Aviation."

Incidentally, as a bit of warning to readers of this space—the Editor-in-Chief is packing a loaded sword-off-thrust for the next man who refers to his paper as "Aviation" magazine in his hearing.

Since the boom in the airplane business has greatly curbed the chief difficulty has been to keep the supply of airplanes somewhere near the demand. However, when business began falling off again some day we might have good use for the conversion introduced at the New York Show—a sort of an extended sales place, quickly requiring visitors to the show to buy. A full account is given in the clipping from the New York World, sent in by R. A. S. of New York.

"Aviation" Post No. 243, American Legion, sponsor of the New York Aviation Show in Grand Central Palace, ostensibly asked by the police, took steps yesterday, in return for permission extraordinary from the city to remain open on Sunday, to use the aerial exhibition, for one day, was kept on a strictly educational basis. The moral situation for was collected, but Lloyd L. Anderson, manager of the show, distributed mimeographed warnings to all exhibitors that no Sunday sales would be contemplated and that a number of plainclothesmen had been detailed to circulate in the crowd to see that the rule was enforced."

A contributor from Gloucester, Pa., who expects to include his name, sends in a clipping from a local paper describing the Lockheed which recently broke the non-stop coast-to-coast record. "The Air Express is the fastest ever in the air. Its fuselage is painted red and its wings and tail have a slippery hue."

In spite of our complaints in the matter the newspaper reporters are still making the main points of their stories about our lady there. These women have made attempts at the simplest endurance records and one of the shortest record and none of the newspaper accounts have told us of Lady Heath's record for wearing four flying suits and a leopard skin simultaneously has been broken.

SCHLEE and BROCK

World and Endurance Flyers

CHOOSE LOCKHEED VEGA

The plane that will carry the same pay load farther, faster and with less fuel expenditure

FROM a background of long experience, careful observation and constant comparison—Schlee and Brock have chosen Lockheed aircraft for distribution. Their choice is based on a studious and careful analysis not only of the Lockheed-Vega itself but of competitive aircraft as well—a comparison in which the Lockheed, in their opinion, is outstanding for its performance and offers today a miley well in advance of present aircraft standards.



THE BEST SHIP I EVER FLEW - SPEED - UTILITY - ECONOMY" - BILLY BROCK



The Lockheed has a trimmer and shapelier of line with lack of personal eccentricity only as the high speed and early racing type. It is the beauty of her that makes the Lockheed to carry the same national banner and faster with less fuel expenditure than any of the present day type.

HAS WON RECORDS GALORE: Holds Both Trans-continental Speed Records; Was First Over North Pole and Chosen by Wilkins for South Pole Expedition

THE famous Lockheed-Vega Warp measured plane, piloted by Art Goebel (left) and Harry Tucker (right), was the only ship to complete the flight from New York to Los Angeles during the recent Air Derby (time 23 hours and 45 minutes—excluding one stop at Phoenix, Arizona, of 35 minutes). The Yankee Doodle established speed records both ways across the Continent as well as numerous other new records in speed and safety.



ACROSS 2,300 miles of frozen Arctic waste—Capt. George Wilkins and Lieut. Carl Felsang on April 15, 1928, fire a standard production Loickhead-Vega cabin monomorph in a hazardous non-stop flight of 200, hours—from Point Barrow to Spitzbergen. *Said Felsang:* "The Vega lies 'hands-off'—as ease of handling and comfort placing it on a chain by itself." Because of an outstanding speed and power in the North Pole dash, Wilkins chose it for his South Pole Expedition.

PILOT who have never flown a Lockheed have a real treat in store. I mean, as I certainly was a real thrill for me and I've been at the stick of a number of types before I had the pleasure of flying a Lockheed. Construction methods are far in advance of so almost any redesign, and yet successfully proved in every map makes possible its wonderful performance. A customer's thought will show that on or three miles an hour greater cruising speed or two or three hundred feet a minute greater climb at altitude, will also spell the difference between success or failure in commercial flying. And these are some of the advantages we can offer in the Lockheed

—Daily Review

PERFORMANCE GUARANTEED WOLF TIGER		
Trip Speed	470 mi. p. h.	
Cruising Speed	11 mi. p. h.	
Climb	1700 ft. p. m.	
WHEELWIND TIGER		
Trip Speed	160 mi. p. h.	
Cruising Speed	120 mi. p. h.	
Climb	1700 ft. p. m.	



THE fuselage of the LOCKHEED MONOPLANE is manufactured by a special patented process exclusively controlled by the Lockheed Aircraft Company. This process produces a monocoque fuselage of three ply, vertical grain spruce veneer, assembled with the best grade of casing glue. The fuselage shell is made in two halves, and as each half is subjected to a JNIFORM pressure of about 150 tons during the glazing process, the adhesion is perfect throughout, and the highest tensile strength is obtained. The finished product manufactured by this process has many advantages over the fabric-covered or wood truss type in common use, a few of them being:

Highest possible strength-weight ratio, permanent alignment, perfect stress (highly unbalanced) cable spool, low cost of maintenance, redundancy, stability and controllability; and military adaptability.



SCHLEE and BROCK PLAN DEALER ORGANIZATION

HAVING established offices at 2007-10 Fisher Building, Detroit, Schlee and Brock are building up a dealer organization to market Lockheed Aircraft. Their plan of organization is modeled after those of the automotive industry which have proved most successful and contains many ideas and innovations absolutely new to the aviation industry. The unusual performance of the Lockheed, the sound financial structure of the Lockheed Aircraft Company, a progressive factory policy which is steadily increasing production and manufacturing facilities—these are all factors in making the Lockheed sales franchise eagerly sought by those who desire the best—and the most profitable.

SERVICE to be KEYNOTE

SERVICE is to be an important factor in the structure Schlee and Brock are building up. One of the first ideas to be put into application will be a register of pilots—which the Schlee-Brock Aircraft Corporation is compiling. Efficient and deserving pilots, by means of this reference file, may be brought into prompt contact with owners desiring pilots. The Schlee-Brock Pilot's Register will give the employer valuable and specific information which will enable him to select the pilot whose experience and knowledge best qualifies him. Pilots are urged to return the coupon at the bottom of the page and blanks will be mailed promptly for filling out. Register with us now. We have already had numerous requests for pilots and have recommended several for worth-while positions—with absolutely no obligation on the part of the pilot, of course.

Mail This Coupon



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2007 Fisher Building, Detroit

☐ Please send me the necessary blanks to the 1 my register in your PILOT'S REGISTER

Name _____
Address _____

☐ I am interested in obtaining a dealer franchise for the sale of Lockheed aircraft in my territory. Please send me details of your plan.

Name _____
Address _____

☐ Please send up additional and more detailed information regarding Lockheed airplanes.

Name _____
Address _____



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DETROIT
"The World's First
Office Building"

LOOK AT THESE LOCKHEED RECORDS

(Made with Standard Production Plans)

CAPT. WILKIN LOCKHEED "VEGA," Windward-Motored, flew over the North Pole on April 13, 1928—Covering a distance of 3,100 miles—Transit time (20) hours

Lockheed Warp Motored "Tussock Doodle" Records: SAN DIEGO to Philadelphia, Pa.—13 hours, 10 minutes Non-stop Los Angeles to New York—3.8 hours, 33 minutes—Speed 145 m. p. h.

New York to Los Angeles—23 hours, 45 minutes (including one stop at Phoenix, Ariz. of 35 min.) Los Angeles to Cincinnati—Non-stop—3:40 Miles—15 hours, 17 min.—135 m. p. h.

New York to Los Angeles—Non-stop—24 hours, 50 minutes

Halliburton Warp-Motored Lockheed "Vega" Winner Across Canadian "C" race—recent Air Daily Winner Closed Course Race—recent Air Daily



The reason is that as shown in the last one, it is really due to its superior performance for it really does "carry the same payload faster, better and with less fuel expenditure"

Among some of the well-known users of Lockheed airplanes are:

Standard Oil Company
of New Jersey
Meadow Air Lines
The Texaco Company
Northwest Air Lines

Universal Air Lines
of Chicago
Western Air Express
Fitz F. Halliburton Co.
Air Goods—Harry Tucker

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AVIATION
February 22, 1929

The New Travel Air four place Cabin Monoplane



"Just take the wheel at the right, up as front, and fly as easily as you operate your automobile. Turn wheel to the right and the right wing inclines downward; turn wheel to the left and the left wing inclines downward. Push right pedal to turn right and left pedal to turn left. Push steering column forward to nose down—pull it back to nose up. The combination of these operations gives you the desired maneuver."

"All the while the pilot at the other wheel is flying with you—because the two wheels are synchronized and must operate together. Thus the pilot easily and quickly corrects any deviation you might make from the flight path. You are flying while you are learning—no theory,

but actual practice in the air

"The new Travel Air Cabin Monoplane is inherently stable, and it stays well automatically maintain straight and normal flight. The slightest movement of the controls corrects for any atmospheric variation.

"Soon you will find it unnecessary to employ a pilot for you will have learned to fly—almost without making it, because of the dual control—the greatest single advancement ever made

"Look! She's flying the ship—yet it's her first time in the air.... Dual Control makes this possible."

in aircraft construction."

The New 4 place Travel Air Cabin Monoplane is built out of long years of flying experience and is a worthy companion ship to the famous Travel Air 6 place Cabin Monoplane—Type 6000.

Full particulars and The Story of Travel Air on request, which illustrates and describes 9 types of Travel Air Models.



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The Standard of Aircraft Construction
WICHITA, KANSAS

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Here is the outstanding plane of the new season!



S P E C I F I C A T I O N S

Take-off Speed	200 mph	Wing Area with Slat	178 sq. ft.
Landing Speed	70 mph	Length Over All	19 ft. 2 in.
Top Speed	201 mph	Height	7 ft. 1 in.
Maximum Climb per Minute	1,000 ft.	Span Tail Plane	1 ft.
Steady Climb	19,000 ft.	Wing Span	30 ft.
Service Ceiling	16,000 ft.	Full Load	1,000 lbs.
Power Loading (40 H.P. Motor)	100 lbs. per H.P.	Unfolded Load	600 lbs.
Wing Loading	470 lbs. per sq. ft.	Power-plant Equipment	10 H.P. Motor
Span Top Wing	31 ft. 6 in.	Price	\$2,100, F.O.B.
Span Bottom Wing	25 ft.		

Price subject to change without notice

THE ARROW SPORT was the sensation of the New York Aircraft Show, as it was in Chicago. Wherever the ARROW SPORT is shown or demonstrated it is pronounced the outstanding plane of the season.

Officials of the Eastern Arrow Aircraft Corporation, 5 East 17th Street, New York, N. Y., were so well pleased with the safety and performance of the ARROW SPORT that an order was placed for 200 of these remarkable ships.

This purchase was made only after the ARROW SPORT was put through severe demonstration flights by a dozen leading test pilots and well known aviators.

These flights proved conclusively that the ARROW SPORT will not spin following a stall. It has safety and performance.

The Eastern Arrow Aircraft Corporation, under the direction of Harry L. Day, Lee W. Rockwell and Frederick Becker, will be Northeastern distributors for the ARROW SPORT.

The ARROW SPORT is produced in a modern, well equipped factory of 100,000 square feet of floor space. Increased facilities will bring the 1929 production up to the demand that is coming from every section of the country. Investigate the possibilities of this remarkable ship. Write immediately to:

ARROW AIRCRAFT & MOTORS CORPORATION, HAVELOCK, NEBRASKA

Arrow Sport

THINK YOU are serious AVIATOR

Arrow Sport

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NEW!—Through and Through!

*"An unequaled bad-weather ship," say veteran pilots
of the new Ryan Brougham for Six*

—And a fair weather ship beyond compare, too—is this new Brougham, the most beautiful ship and the greatest performer Ryan ever built. The new Ryan represents the happy medium—speed, stability, maneuverability, and now perfecting coachwork design puts it in a class with the finest motor cars.

"Inherent stability" is no longer an empty phrase. It is the verdict of every pilot who has flown this brilliant ship. "Holds off" flight is now commonplace—here is a ship which, properly balanced, will keep constant altitude at any engine speed... will recover automatically when the gun is cut... has directional stability, even at stalling speeds.

"Red" Haggan, Ryan Chief Test Pilot, will tell you—and show you—it is the best balanced ship in America today. Pull the nose high in a stall and you will experience no falling off. If conditions demanded, this balanced ship could be flown and landed with the stick alone, or with only the rudder and stabilizer. These vital qualities mark their biggest development in the Ryan.

Exterior attractively paneled—interior is the best taste in coach design. Individual middle and control seats... comfortable for cross country trips. New controls give an absolutely clean floor... nothing to jam or catch... easy brake control... the ultimate in comfort and security.

This one-winged Brougham is designed for first-class commercial air travel and is well adapted to special speed trips of business executives. It takes off faster and lands slower than any other plane of its type. The substantial performance given by the B-5 model with the Wright J-5 motor is amplified to an astounding degree in the B-6 model with the Wright J-6 motor.

Crafted by a renowned company which built and sold more *Whitcomb* cabin ships in rapid class any other motor.

Ships of this new model are ready for early delivery through Mahoney-Ryan distributors situated at the leading airports throughout this country and abroad. Illustrated four-color brochure giving full description will shortly be available to interested individuals and corporations.

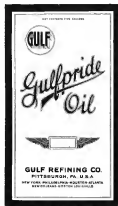
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PLEASE YOU for machine AVIATION



See Speed Indicator and Pressure Gauge. Also, made by Bakelite Molding Co., 100 W. 42nd St., New York 18, N. Y.

"Consolidated" uses Bakelite Molded

Making improved cases for 50% less

WHEN the air speed indicator illustrated was fused in metal, electrolytic trouble developed frequently from contact between the mechanism and the metal case. To overcome this leak through providing an insulating housing of phenol-formaldehyde resin, this Consolidated instrument case is now made of Bakelite Molding.

The high dielectric strength of Bakelite Molding is supplemented by its strong resistance to corrosion. Bakelite Molding is non-hygroscopic and is unaffected by moisture of atmospheric temperature. Unlike metal, Bakelite Molding will not stain, rust or corrode, and the Bakelite case saves from the mold with a finished finish—full black on the rim and flange, and lacquer black on the body.

Molded in one piece, each case is fitted with two threaded bracket lugs which are firmly embedded at the time of molding. Seven screw holes are also formed and finishing operations eliminated. This simplified construction through the use of Bakelite Molding affords a 20% saving in cost.

Representatives are wanted to sell the Corporation of Bakelite Molding. Write for Bulletin 10-10. Bakelite Molding.

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AIRPORT EQUIPMENT DIVISION
of the
MARYLAND METAL BUILDING COMPANY
Baltimore Maryland

...A landing plane + a parked Lizzie = danger

OF course a flying field makes a fine place for sightseers to park. But it is supposed to be devoted exclusively to flying purposes. Planes should not have to fight with Lizzies for room to land and take-off.

The airport operator can attract planes and reduce the risk of accident by giving pilots every foot of area the field affords.

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One of 75 Anchor offices is near you—ready to advise or supply complete erection service. Phone the local Anchor Fencing Specialist for any assistance.

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Mohair Fabrics for Cabin Interiors

The Shelton Looms offers a wide variety of mohair fabrics especially adaptable for trimming the interiors of cabin planes. Samples submitted upon request.

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DISTRIBUTOR
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Act now for your success in the greatest year of Aviation.

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The Supreme
Propeller is
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SINCE 1908
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Our Production facilities make possible
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Turkey quality for reliable engines.



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Strong, Light Weight

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*Airplanes, Seaplanes,
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*Standardized Drawn Sections and
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STREAMLINE

A GOOD side-ford strength and better support.
A new and advanced in the perfect streamline
form of the Bendix-Lynch-Wheel for airplanes.

Each wheel has a self-contained brake unit—
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Removes axle disc and axle and length, under their
applied action of this wheel follows the standards
established by the U. S. Air Corps.

Bendix Wheel and Brake are made to
precision in standard size.

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Division of The Bendix Corporation, Chicago

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FOR SAFETY



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COMPLETE Airport Service—preliminary surveys and reports, engineering surveys and studies, site selection.

Design and Construction—grading, drainage, lighting, all necessary airport buildings such as hangars, depots, etc. Also airport factory buildings.

Also fine approximations costs and booklet "Airports and Aviation Buildings"

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Safe Lock Terminals for Tie Rods

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MacWhyte Company, 1945 Fourteenth Avenue, Kenosha, Wisconsin. Makers of Steamline and Round Tie Rods.



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for power transmission around corners and over obstacles—silent, steady, durable, strong.

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This new 175 H.P. air-cooled commercial engine is already a favorite among manufacturers, operators, and pilots. For detailed information concerning its advantages, address the CURTISS AEROPLANE AND MOTOR COMPANY, Inc., Garden City, N. Y.

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12,000 pounds of steel covered, 25,000 mile floor, 24,000 square miles covered. . . Fokker aircraft carrying Pioneer Instruments were largely used by Pan-American Airways to make the record for the year ending December 31, 1938.

Sikorsky, Loening, Fairchild, and Ford aircraft, other airplanes in Pan American service, are also Pioneer equipped.

Invasive to Extremes of Temperature

Consistent Byrd purchased Pioneer Instruments for service in the Antarctic. For Pioneer Instruments are painstakingly made and rigidly tested to function accurately in tropical heat or polar cold.

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THE HORNET ON THE SPANISH MAIN

The "flying yacht" brings new pleasures to the West Indian vacation cruise. Major J. M. Patterson, wealthy Chicago publisher, his daughter Alicia, and Floyd Gibbons, noted writer, piloted by Frederick Becker, have just completed a five thousand mile trip through the West Indies in Major Patterson's "Hornet" powered Sikorsky Amphibian "Liberty."

Throughout the cruise of the "Liberty" mechanical difficulty was not encountered and it was unnecessary to use a single spare part or even change a spark plug. This characteristic Pratt & Whitney performance has earned the praise of the owner and the pilot of the "Liberty."

Send for the interesting story of this cruise by Pilot Frederick Becker. It is a story of intriguing places connected with earliest American history, and an account of aircraft dependability.

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